

CLAIMS:

1. (Currently Amended) A method for promoting wound healing in a subject in need of such treatment comprising administering to the subject a wound-healing effective amount of a composition containing a wound-healing polypeptide selected from the group consisting of a ~~[[first]]~~ polypeptide comprising the amino acid sequence LKKTET (SEQ ID NO: 1) ~~and having wound-healing activity, a second polypeptide comprising a conservative variant of said amino acid sequence, LKKTET (SEQ ID NO:1)~~ in which ~~at least one of~~ a hydrophobic amino acid residue is replaced ~~[[for]]~~with another hydrophobic amino acid residue ~~in said amino acid sequence or~~ a polar amino acid residue is replaced ~~[[for]]~~with another polar amino acid residue ~~in said amino acid sequence wherein said conservative variant has wound-healing activity, TB4, thymosin beta (TB) 4, a TB4 isoform that comprises LKKTET (SEQ ID NO:1) or LKKTET (SEQ ID NO:1) in which a hydrophobic amino acid residue is replaced with another hydrophobic amino and residue or a polar amino acid residue is replaced with another polar amino acid residue or both, TB4ala, TB9, TB10, TB11, TB12, TB13, TB14, TB15, gelsolin, vitamin D binding protein (DBP), profilin, cofilin, depactin, Dnasel, villin, vilin, fragmin, severin, capping protein, beta- actinin and acumentin, wherein said polypeptide has would-healing activity.~~
2. (Currently Amended) The method of claim 1, wherein the wound-healing polypeptide is ~~thymosin- β 4-TB4~~ or ~~[[an]]~~said isoform of ~~thymosin- β 4TB4~~.
3. (Currently Amended) The method of claim 2, wherein the composition further contains an agent that stimulates the production of ~~thymosin- β 4TB4~~ peptide.
4. (Original) The method of claim 3, wherein the agent is transforming growth factor beta (TGF-b).
5. (Previously Presented) The method of claim 1, wherein the wound-healing polypeptide is delivered systemically.

6. (Previously Presented) The method of claim 1, wherein the wound-healing polypeptide is delivered topically.
7. (Previously Presented) The method of claim 6, wherein the wound-healing polypeptide is contained in a topical formulation selected from the group consisting of a gel, cream, paste, lotion, spray, suspension, dispersion, salve, hydrogel and ointment.
8. (Previously Presented) The method of claim 1, wherein the wound-healing polypeptide is recombinant or synthetic.
9. (Withdrawn/Currently Amended) The method of claim 2, wherein [[the]]said isoform of thymosin- β 4TB4 is at least 70% homologous to thymosin- β 4the TB4 peptide set forth as SEQ ID NO:2.
10. (Withdrawn/Currently Amended) The method of claim 9, wherein [[the]]said isoform of thymosin- β 4TB4 is selected from the group consisting of: T β 4^{ala}, T β 9, T β 10, T β 11, T β 12, T β 13, T β 14 and T β 15 of TB4ala, TB9, TB10, TB11, TB12, TB13, TB14 and TB15.
11. (Original) The method of claim 1, further comprising contacting the site of the wound with an agent which promotes wound healing.
12. (Withdrawn) The method of claim 11, wherein the agent is selected from the group consisting of IGF, IGF-I, IGF-2, IL-I, PDGF, FGF, KGF, VEGF, prothymosin α , thymosin α I or combinations thereof.
13. (Currently Amended) A method for promoting wound healing in a subject in need of such treatment comprising administering to the subject a wound-healing effective amount of a composition containing thymosin- β 4TB4 or an isoform of thymosin β 4TB4 that comprises LKKTET (SEQ ID NO:1) or LKKTET (SEQ ID NO:1) in which a hydrophobic amino acid residue is replaced with another hydrophobic amino acid

residue or a polar amino acid residue is replaced with another polar amino acid residue, or both.

14. (Currently Amended) The method of claim 13, wherein the composition comprises ~~thymosin- β 4~~TB4, and further contains an agent that stimulates the production of ~~thymosin- β 4~~TB4 peptide.

15. (Currently Amended) The method of claim 14, wherein the agent is ~~transforming-growth factor beta (TGF- β)~~TGF- β .

16. (Currently Amended) The method of claim 13, wherein the composition comprises ~~thymosin- β 4~~TB4, and the ~~thymosin- β 4~~TB4 is delivered systemically.

17. (Currently Amended) The method of claim 13, wherein the composition comprises ~~thymosin- β 4~~TB4, and the ~~thymosin- β 4~~TB4 is delivered topically.

18. (Currently Amended) The method of claim 17, wherein the composition comprises ~~thymosin- β 4~~TB4, and the ~~thymosin- β 4~~TB4 is contained in a topical formulation selected from the group consisting of a gel, cream, paste, lotion, spray, suspension, dispersion, salve, hydrogel and ointment.

19. (Currently Amended) The method of claim 13, wherein the composition comprises ~~thymosin- β 4~~TB4, and the ~~thymosin- β 4~~TB4 is recombinant or synthetic.

20. (Withdrawn/Currently Amended) The method of claim 13, wherein [[the]]said isoform of ~~thymosin- β 4~~TB4 is at least 70% homologous to ~~thymosin- β 4~~TB4 peptide set forth as SEQ ID NO:2.

21. (Withdrawn/Currently Amended) The method of claim 13, wherein [[the]]said isoform of ~~thymosin- β 4~~TB4 is selected from the group consisting of: ~~T β 4^{ala}, T β 9, T β 10, T β 11, T β 12, T β 13, T β 14 and T β 15~~TB4^{ala}, TB9, TB10, TB11, TB12, TB13, TB14 and TB15.

22. (Original) The method of claim 13, further comprising contacting the site of the wound with an agent which promotes wound healing.

23. (Currently Amended) A method for promoting wound healing in a subject in need thereof comprising contacting the tissue with a therapeutically effective amount of a composition containing a wound-healing polypeptide selected from the group consisting of a ~~[[first]]~~polypeptide comprising the amino acid sequence LKKTET (SEQ ID NO: 1) ~~and having wound-healing activity, a second polypeptide comprising a conservative variant of said amino acid sequence, LKKTET (SEQ ID NO:1) in which at least one of a hydrophobic amino acid residue is replaced [[for]]~~with another hydrophobic amino acid residue ~~in said amino acid sequence or a polar amino acid residue is replaced [[for]]~~with another polar amino acid residue ~~in said amino acid sequence wherein said conservative variant has wound-healing activity, TB4, a TB4 isoform that comprises LKKTET (SEQ ID NO:1) or LKKTET (SEQ ID NO:1) in which a hydrophobic amino acid residue is replaced with another hydrophobic amino and residue or a polar amino acid residue is replaced with another polar amino acid residue or both, TB4ala, TB9, TB10, TB11, TB12, TB13, TB14, TB15, gelsolin, vitamin D binding protein (DBP), profilin, cofilin, depactin, Dnasel, villin~~in ~~villin~~, fragmin, severin, capping protein, beta- actinin and acumentin, where said polypeptide has wound-healing activity.

24. (Currently Amended) The method of claim 23, wherein the wound-healing polypeptide is ~~thymosin β 4-TB4~~ or ~~[[an]]~~said isoform of ~~thymosin β 4-TB4~~.

25. (Original) The method of claim 23, wherein the contacting is *in vivo* in a subject.

26. (Original) The method of claim 23, wherein the contacting is *ex vivo*.

27. (Original) The method of claim 23, wherein the subject is a mammal.

28. (Original) The method of claim 27, wherein the mammal is human.

29. (Currently Amended) The method of claim 24, wherein the composition further contains an agent that stimulates the production of ~~thymosin- β 4~~ TB4 peptide.
30. (Currently Amended) The method of claim 29, wherein the agent is ~~transforming-growth factor beta (TGF- β)~~ TGF- β .
31. (Withdrawn) The method of claim 29, wherein the agent is a mineral.
32. (Withdrawn) The method of claim 29, wherein the mineral is zinc.
33. (Previously Presented) The method of claim 23, wherein the wound-healing polypeptide is delivered topically.
34. (Previously Presented) The method of claim 23, wherein the wound-healing polypeptide is contained in a topical formulation selected from the group consisting of a gel, cream, paste, lotion, spray, suspension, dispersion, salve, hydrogel and ointment.
35. (Previously Presented) The method of claim 23, wherein the wound-healing polypeptide is delivered systemically.
36. (Original) The method of claim 23, further comprising contacting the site of the tissue with an agent which promotes wound healing.
37. (Withdrawn) The method of claim 36, wherein the agent is selected from the group consisting of IGF, IGF-I, IGF-2, PDGF, FGF, KGF, VEGF, prothymosin α , thymosin α 1 or combinations thereof.
38. (Original) The method of claim 23, wherein the tissue is selected from the group consisting of epidermal, eye, uro-genital, gastro-intestinal, cardiovascular, muscle, connective, and neural.
39. (Previously Presented) The method of claim 23, wherein the tissue is skin tissue.

40. (Withdrawn) The method of claim 23, wherein the tissue is an eye tissue.

41-52. (Canceled).

53. (Currently Amended) A method of promoting epithelial cell migration, comprising contacting an epithelial cell with a composition comprising ~~thymosin- β 4TB4~~ or an isoform of ~~thymosin- β 4TB4~~ that comprises LKKTET (SEQ ID NO:1) or LKKTET (SEQ ID NO:1) in which a hydrophobic amino acid residue is replaced with another hydrophobic amino acid residue or a polar amino acid residue is replaced with another polar amino acid residue or both.

54. (Previously Presented) The method of claim 53, wherein the composition comprises ~~thymosin- β 4TB4~~, and the epithelial cell is a skin cell.

55. (Original) The method of claim 54, wherein the skin cell is a keratinocyte.

56. (Withdrawn/Currently Amended) The method of claim 53, wherein the composition comprises ~~thymosin- β 4TB4~~, and the epithelial cell is a corneal epithelial cell.

57. (Currently Amended) The method of claim 53, wherein the composition comprises ~~thymosin- β 4TB4~~, and the contacting is *in vivo*.

58. (Currently Amended) The method of claim 57, wherein the composition comprises ~~thymosin- β 4TB4~~, and the contacting is topical.

59. (Currently Amended) The method of claim 57, wherein the composition comprises ~~thymosin- β 4TB4~~, and the contacting is systemic.

60. (Currently Amended) The method of claim 53, wherein the composition comprises ~~thymosin- β 4TB4~~, and the contacting is *in vitro* or *ex vivo*.

61. (Original) The method of claim 53, wherein the composition is selected from the group consisting of a gel, cream, paste, lotion, spray, suspension, dispersion, salve, hydrogel, ointment, and a biocompatible matrix.

62-132. (Canceled)

133. (Previously Presented) The method of claim 1, wherein the wound is in a tissue selected from the group consisting of a skin tissue, a dermal tissue, an epidermal tissue, an eye tissue, a cornea, a retina, a uro-genital tissue, a gastro-intestinal tissue, a cardiovascular tissue, a muscle tissue, a connective tissue, a neural tissue, a bone tissue, a cartilage tissue, a breast tissue, a central nervous system tissue, a pancreatic tissue, a liver tissue, a reticulo-endothelial system (RES) tissue and an endometrial tissue.

134. (Previously Presented) The method of claim 1, wherein the wound is present in a disease or condition selected from the group consisting of an arthritis, an osteoporosis, a musculo-skeletal disorder, a burn, an ulcer or an ulceration, a pressure ulcer, a diabetic ulcer, a skin lesion or disease, a neurological disease, a neurodegenerative disease, a nerve disease, a bone disease, a heart disease, an eye disease, corneal damage, retinal damage, skin damage, a cardiovascular disease, an ischemia, an atherosclerosis, a fibrotic disorder, a sclerotic disorder, a cancer and a cell proliferative disorder.

135. (Previously Presented) The method of claim 1, wherein the composition is administered by a route selected from the group consisting of an injection, a surgery, a catheter, a topical administration, a local injection, an inhalation, a systemic administration, an oral administration, an intranasal administration, an aerosol administration, an intravenous administration, an intraperitoneal administration, an intramuscular administration, an intracavity administration and a transdermal administration.

136. (Currently Amended) The method of claim 1, wherein the composition comprises a formulation comprising an excipient or a composition selected from the group consisting of saline, sterile water, a sodium chloride solution, lactated Ringer's intravenous, Ringer's dextrose, dextrose and sodium chloride, lactated Ringer's intravenous polyalkylene glycol, polyethylene glycol, vegetable oil, hydrogenated ~~naphthalene~~naphthalene, lactide polymer, lactide/glycolide copolymer, polyoxethylene-polyoxypropylene, polyoxyethylene-9-lauryl ether, glycocholate and deoxycholate, phosphatidyl, phosphatidylglycerol, phosphatidylcholine, phosphatidylserine, phosphatidylethanolamine, sphingolipids, cerebroside, gangliosides; ~~phosphatidylcholine~~, dipalmitoylphosphatidylcholine, distearoylphosphatidyl-choline, injectable organic ester, ~~ethyleate~~ethyl oleate, an alcoholic/aqueous solution, an alcoholic/aqueous emulsion, an alcoholic/aqueous suspension.

137-172. (Canceled).

173. (Currently Amended) The method of claim 1 wherein said polypeptide is present in said composition at a concentration of at least ~~about~~0.01 ng/ml and up to ~~about~~ 60 micrograms per 300 microliter.

174. (Currently Amended) The method of claim 13 wherein said polypeptide is present in said composition at a concentration of at least ~~about~~0.01 ng/ml and up to ~~about~~ 60 micrograms per 300 microliter.

175. (Currently Amended) The method of claim 23 wherein said polypeptide is present in said composition at a concentration of at least ~~about~~0.01 ng/ml and up to ~~about~~ 60 micrograms per 300 microliter.

176. (Currently Amended) The method of claim 53 wherein said polypeptide is present in said composition at a concentration of at least ~~about~~0.01 ng/ml and up to ~~about~~ 60 micrograms per 300 microliter.

177. (Canceled).

178. (Withdrawn/Currently Amended) A method of treating or preventing disease in a subject comprising administering to the subject an effective amount of a composition comprising an agent which increases the activity of, stimulates the production of, or up-regulates at least one of a polypeptide comprising amino acid sequence LKKTET [SEQ ID NO:1] or a conservative variant thereof in which at least one of a hydrophobic amino acid residue is replaced ~~[[for]]~~with another hydrophobic amino acid residue in said amino acid sequence or a polar amino acid residue is replaced ~~[[for]]~~with another polar amino acid residue in said amino acid sequence, ~~T β 4, a T β 4TB4, a TB4 isoform that comprises LKKTET (SEQ ID NO:1) or LKKTET (SEQ ID NO:1) in which a hydrophobic amino acid residue is replaced with another hydrophobic amino acid residue or a polar amino acid residue is replaced with another polar amino acid residue, or both, a functional fragment of T β 4 or a T β 4TB4 or said TB4 isoform having biological activity of T β 4 or a T β 4TB4 or said TB4 isoform, T β 4ala, T β 9, T β 10, T β 11, T β 12, T β 13, T β 14, T β 15, TB4ala, TB9, TB10, TB11, TB12, TB13, TB14, TB15, gelsolin, vitamin D binding protein (DBP), profilin, cofilin, depactin, Dnasel, villin, villin, fragmin, severin, capping protein, beta- actinin, acumentin, an actin-sequestering peptide, or an actin binding peptide, an actin-mobilizing peptide, or an actin polymerization-modulating peptide.~~

179. (Withdrawn/Currently Amended) A method of treating or preventing disease in a subject comprising administering to the subject an effective amount of a composition comprising an agent which decreases the activity of or down-regulates at least one of a polypeptide comprising amino acid sequence LKKTET [SEQ ID NO:1] or a conservative variant thereof in which at least one of a hydrophobic amino acid residue is replaced ~~[[for]]~~with another hydrophobic amino acid residue in said amino acid sequence or a polar amino acid residue is replaced ~~[[for]]~~with another polar amino acid residue in said amino acid sequence, ~~T β 4, a T β 4TB4, a TB4 isoform that comprises LKKTET (SEQ ID NO:1) or LKKTET (SEQ ID NO:1) in which a hydrophobic amino acid residue is replaced with another hydrophobic amino acid residue or a polar amino acid residue is~~

replaced with another polar amino acid residue, or both, a functional fragment of T β 4 or a T β 4TB4 or said TB4 isoform having biological activity of T β 4 or a T β 4TB4 or said TB4 isoform, T β 4^{ala}, T β 9, T β 10, T β 11, T β 12, T β 13, T β 14, T β 15TB4ala, TB9, TB10, TB11, TB12, TB13, TB14, TB15, gelsolin, vitamin D binding protein (DBP), profilin, cofilin, depactin, Dnasel, villin, villin, fragmin, severin, capping protein, beta- actinin, acumentin, an actin-sequestering peptide, an actin binding peptide, an actin-mobilizing peptide, or an actin polymerization-modulating peptide.

180. (Withdrawn/Currently Amended) A method of promoting growth of a prosthetic tissue or organ, comprising administering a polypeptide to the prosthetic tissue or organ, the polypeptide agent comprising at least one of amino acid sequence LKKTET [SEQ ID NO:1] or a conservative variant thereof in which at least one of a hydrophobic amino acid residue is replaced for another hydrophobic amino acid residue in said amino acid sequence or a polar amino acid residue is replaced for another polar amino acid residue in said amino acid sequence, T β 4, a T β 4TB4, a TB4 isoform that comprises LKKTET (SEQ ID NO:1) or LKKTET (SEQ ID NO:1) in which a hydrophobic amino acid residue is replaced with another hydrophobic amino acid residue or a polar amino acid residue is replaced with another polar amino acid residue or both, a functional fragment of T β 4 or a T β 4TB4 or said TB4 isoform having biological activity of T β 4 or a T β 4TB4 or said TB4 isoform, T β 4ala, T β 9, T β 10, T β 11, T β 12, T β 13, T β 14, T β 15TB4ala, TB9, TB10, TB11, TB12, TB13, TB14, TB15, gelsolin, vitamin D binding protein (DBP), profilin, cofilin, depactin, Dnasel, villin, villin, fragmin, severin, capping protein, beta- actinin, or acumentin.

181. (Withdrawn/Currently Amended) A method of diagnosing a pathological state in a subject suspected of having pathology characterized by a disorder associated with [[T β 4]]TB4, comprising: obtaining a sample from the subject; detecting a level of [[T β 4]]TB4 in the sample; and comparing the level of [[T β 4]]TB4 in the sample to the level of [[T β 4]]TB4 in a normal standard sample.

182. (Withdrawn/Currently Amended) A composition for treating or preventing tissue injury in a subject comprising a polypeptide comprising at least one of amino acid sequence LKKTET [SEQ ID NO:1] or a conservative variant thereof in which at least one of a hydrophobic amino acid residue is replaced for another hydrophobic amino acid residue in said amino acid sequence or a polar amino acid residue is replaced for another polar amino acid residue in said amino acid sequence, ~~thymosin β 4 (T β 4), a T β 4TB4, a TB4 isoform~~ that comprises LKKTET (SEQ ID NO:1) or LKKTET (SEQ ID No:1) in which a hydrophobic amino acid residue is replaced with another hydrophobic amino acid residue or a polar amino acid residue is replaced with another polar amino acid residue or both, a functional fragment of ~~T β 4 or a T β 4TB4 or said TB4 isoform~~ having biological activity of ~~T β 4 or a T β 4TB4 or said TB4 isoform, T β 4ala, T β 9, T β 10, T β 11, T β 12, T β 13, T β 14, T β 15TB4ala, TB9, TB10, TB11, TB12, TB13, TB14, TB15,~~ gelsolin, vitamin D binding protein (DBP), profilin, cofilin, depactin, Dnasel, ~~villin~~avilin, fragmin, severin, capping protein, beta- actinin, or acumentin; wherein said polypeptide is present in a carrier comprising an aerosol, alcoholic/aqueous emulsion, alcoholic/aqueous solution, alcoholic/aqueous suspension, aqueous physiological buffer suspension, aqueous solution containing deoxycholate, aqueous solution containing glycocholate, aqueous solution containing polyoxyethylene-9-lauryl ether, biocompatible and biodegradable lactide polymer, biocompatible and biodegradable lactide/glycolide copolymer, biocompatible and biodegradable polyoxethylene-polyoxypropylene copolymers, bioresorbable polymer, controlled release matrix, dextrose and sodium chloride, electrolyte replenishers, electrolyte replenishers based on Ringer's dextrose, ethyl oleate, ethylene-vinyl acetate copolymer particles, fluid replenishers, glycholate, hydrogel, hydrogenated naphtalenes, implantable infusion system, injectable organic esters, lactated Ringer's intravenous vehicles, lactose, lotion, nutrient replenishers, oil, oily solution, olive oil, osmotic pump, polyalkaline glycol, polyethylene glycol, porous material, propylene glycol, Ringer's dextrose, saline, salve, semi-solid suspension, sodium chloride solution, sustained release composition, tissue engineered construct or vegetable oil.

183. (Previously Presented) The method of claim 1, wherein said polypeptide has actin-sequestering activity or actin-binding activity.

184. (Previously Presented) The method of claim 23, wherein said polypeptide has actin-sequestering activity or actin-binding activity.

185. (Currently Amended) A method of treating tissue injury in a subject in need thereof comprising administering to the subject a composition comprising a polypeptide comprising at least one of amino acid sequence LKKTET [SEQ ID NO:1] or a conservative variant thereof in which at least one of a hydrophobic amino acid residue is replaced for another hydrophobic amino acid residue in said amino acid sequence or a polar amino acid residue is replaced for another polar amino acid residue in said amino acid sequence, ~~thymosin β 4 (T β 4), a T β 4TB4, a TB4 isoform~~ that comprises LKKTET (SEQ ID NO:1) or LKKTET (SEQ ID NO:1) in which a hydrophobic amino acid residue is replaced with another hydrophobic amino acid residue or a polar amino acid residue is replaced with another polar amino acid residue or both, a functional fragment of ~~T β 4 or a T β 4TB4 or said TB4 isoform~~ having biological activity of ~~T β 4 or a T β 4TB4 or said TB4 isoform, T β 4ala, T β 9, T β 10, T β 11, T β 12, T β 13, T β 14, T β 15 TB4ala, TB9, TB10, TB11, TB12, TB13, TB14, TB15, gelsolin, vitamin D binding protein (DBP), profilin, cofilin, depactin, Dnasel, villin/vilin, fragmin, severin, capping protein, beta-actinin, or acumentin, wherein said tissue injury is associated with a wound healing disorder, a skin wound, an ulcer, a diabetic ulcer, a venus ulcer, a chronic ulcer, a burn, a muscular-skeletal disorder, arthritis, osteoporosis, neurological or nerve disease, neuron-degenerative disease, cardiovascular disease, ischemia, atherosclerosis, a tissue wound, tissue damage due to ischemia, ischemic brain disease, ischemic bone disease, ischemic heart disease, corneal tissue damage of the eye, retinal tissue damage of the eye, inflammation, epithelial tissue damage, tissue damage due to surgical procedures, tissue damage due to irradiation, tissue damage due to laceration, tissue damage due to toxic chemicals, tissue damage due to viral infections, fibrotic disorder, sclerotic disorder, a disorder associated with under-expression of T β 4 or a~~

~~Tβ4~~TB4 or said TB4 isoform, a recurrent wound, a tissue repair disorder, a fibrotic tissue disorder, an eye related wound, a deficiency in endometrial growth, endometrial tissue damage, a deficiency in placental growth, inability to maintain pregnancy, or a deficiency in endometrial-trophoblast interaction.

186. (Currently Amended) A method of treatment for treating ~~or preventing~~ tissue injury in a subject in need thereof associated with a wound healing disorder, a skin wound, an ulcer, a diabetic ulcer, a venus ulcer, a chronic ulcer, a burn, a muscular-skeletal disorder, arthritis, osteoporosis, neurological or nerve disease, ~~neuron-~~~~degenerative disease,~~ cardiovascular disease, ischemia, atherosclerosis, a tissue wound, tissue damage due to ischemia, ischemic brain disease, ischemic bone disease, ischemic heart disease, corneal tissue damage of the eye, retinal tissue damage of the eye, inflammation, epithelial tissue damage, tissue damage due to surgical procedures, tissue damage due to irradiation, tissue damage due to laceration, tissue damage due to toxic chemicals, tissue damage due to viral infections, fibrotic disorder, sclerotic disorder, a disorder associated with under-expression of ~~Tβ4~~ ~~or a~~ ~~Tβ4~~TB4 or a TB4 isoform that is LKKTET (SEQ ID NO:1) or LKKTET (SEQ ID NO:1) in which a hydrophobic amino acid residue is replaced with another amino acid residue is replaced with another hydrophobic amino acid residue or a polar amino acid residue is replaced with another polar amino acid residue or both, a recurrent wound, a tissue repair disorder, a fibrotic tissue disorder, an eye related wound, a deficiency in endometrial growth, endometrial tissue damage, a deficiency in placental growth, inability to maintain pregnancy, or a deficiency in endometrial-trophoblast interaction, in a subject in need of such treatment, comprising administering to the subject a composition comprising a polypeptide comprising at least one of amino acid sequence LKKTET [SEQ ID NO:1] or a conservative variant thereof in which at least one of a hydrophobic amino acid residue is replaced for another hydrophobic amino acid residue in said amino acid sequence or a polar amino acid residue is replaced for another polar amino acid residue in said amino acid sequence, ~~thymosin-β4 (Tβ4), a Tβ4~~TB4, a TB4 isoform, a functional fragment of ~~Tβ4~~ ~~or a~~ ~~Tβ4~~TB4 or a TB4 isoform having biological

activity of ~~Tβ4 or a Tβ4~~TB4 or said TB4 isoform, ~~Tβ4ala, Tβ9, Tβ10, Tβ11, Tβ12, Tβ13,~~
~~Tβ14, Tβ15~~TB4ala, TB9, TB10, TB11, TB12, TB13, TB14, TB15, gelsolin, vitamin D
binding protein (DBP), profilin, cofilin, depactin, Dnasel, ~~villin~~villin, fragmin, severin,
capping protein, beta- actinin, or acumentin.